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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/788,893

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EXAMINER

MONIKANG, GEORGE C

ART UNIT

PAPER NUMBER

2615

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/788,893

Applicant(s)

ANDREWS, ANTHONY J.

Examiner

George C. Monikang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 1-28.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 10/788893.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/10/2004, 2/27/2004</u> .                                    | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Objections*

Claim 10 is objected to because of the following informalities: The purpose of the term "(isomorphic?)" is not clear to the examiner. The claim will be analyzed and rejected accordingly. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-9 & 11-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Keele, JR., US Patent Pub. 2004/0240697 A1.

Re Claim 1, Keele, JR. discloses a loudspeaker array comprising at least one line source, said at least one line source comprising a curved one dimensional array of loudspeakers (*fig. 1; abstract*), each of which has a dispersion pattern angle of less than 60.degree. in a plane which is perpendicular to a one dimension of said one dimensional array at said loudspeakers said loudspeakers having propagation axes in a common plane (*para 0067*) which, in use, is vertical, each adjacent pair of said loudspeakers of each said line source being physically time-aligned in a direction

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bisecting said propagation axes of said loudspeakers of said adjacent pair (fig. 2; para 0067).

Re Claim 2, Keele, JR. discloses an array as claimed in claim 1, in which said dispersion pattern angle of at least one of said loudspeakers is less than 50.degree. in said plane perpendicular to said one dimension (para 0070: TABLE 1).

Re Claim 3, Keele, JR. discloses an array as claimed in claim 1, in which said dispersion pattern angle of at least one of said loudspeakers is less than 40.degree. in said plane perpendicular to said one dimension (para 0070: TABLE 1).

Re Claim 4, Keele, JR. discloses an array as claimed in claim 1, in which said dispersion pattern angle of at least one of said loudspeakers is less than 30.degree. in said plane perpendicular to said one dimension (para 0067; para 0070: TABLE 1).

Re Claim 5, Keele, JR. discloses an array as claimed in claim 1, in which said dispersion pattern angle of at least one of said loudspeakers is less than 20.degree. in said plane perpendicular to said one dimension (para 0070: TABLE 1).

Re Claim 6, Keele, JR. discloses an array as claimed in claim 1, in which said dispersion pattern angles of all of said loudspeakers of said at least one line source have the same value in said plane perpendicular to said one dimension (para 0070: TABLE 1 – e.g. speaker driver 118 & 120).

Re Claim 7, Keele, JR. discloses an array as claimed in claim 1, in which said dispersion pattern angle of an upper one of said loudspeakers of said at least one line source is less than said dispersion pattern angle of a lower one of said loudspeakers (para 0070: TABLE 1).

Re Claim 8, Keele, JR. discloses an array as claimed in claim 1, in which all of said loudspeakers of said at least one line source have a same dispersion pattern angle in said common plane (para 0070: TABLE 1 – e.g. speaker driver 118 & 120).

Re Claim 9, Keele, JR. discloses an array as claimed in claim 1, in which each of said loudspeakers is horn-loaded (para 0058).

Re Claim 11, Keele, JR. discloses an array as claimed in claim 1, in which each of said loudspeakers is arranged to produce a substantially plane wave throughout a frequency range of said loudspeaker (claim 1).

Re Claim 12, Keele, JR. discloses an array as claimed in claim 1, in which said at least one line source comprises at least three said loudspeakers (fig. 1: 102-136).

Re Claim 13, Keele, JR. discloses an array as claimed in claim 1, in which said common plane contains said one dimension (fig. 1).

Re Claim 14, Keele, JR. discloses an array as claimed in claim 1, in which said propagation axes of adjacent pairs of said loudspeakers in said at least one line source subtend an angle greater than 0.degree. and less than substantially 10.degree. (para 0070: TABLE 1- e.g. speaker drivers 116 and 118).

Re Claim 15, Keele, JR. discloses an array as claimed in claim 1, in which said propagation axes of an upper pair of said loudspeakers of said at least one line source subtend a smaller angle than said propagation axes of a lower pair of said loudspeakers (para 0070: TABLE 1).

Re Claim 16, Keele, JR. discloses an array as claimed in claim 1, in which said at least one line source is convex (fig. 1).

Re Claim 17, Keele, JR. discloses an array as claimed in claim 1, in which said loudspeakers of said at least one line source are disposed on an arc which is part of a hyperbola (fig. 1).

Re Claim 18, Keele, JR. discloses an array as claimed in claim 17, in which said loudspeakers of said at least one line source are arranged to radiate away from a centre of curvature of said arc (fig. 1).

Re Claim 19, Keele, JR. discloses an array as claimed in claim 1, in which said loudspeakers of said at least one line source are of a same type (paras 0111-0114).

Re Claim 20, Keele, JR. discloses an array as claimed in claim 1, having a frequency range from substantially 250 Hz to substantially 7 KHz (para 0066).

Re Claim 21, Keele, JR. discloses an array as claimed in claim 1, comprising a plurality of said line sources disposed laterally adjacent each other (fig. 1; fig. 10).

Re Claim 22, Keele, JR. discloses an array as claimed in claim 21, in which said common plane of an adjacent pair of said line sources subtend an angle substantially equal to half a sum of said dispersion pattern angles (para 0067), in said planes perpendicular to said one dimensions, of first and second ones of said loudspeakers in first and second ones (para 0067), respectively, of said adjacent pair of said line sources (claim 52).

Re Claim 23, Keele, JR. discloses an array as claimed in claim 21, in which adjacent pairs of said loudspeakers in different ones of said line sources are physically time-aligned in a direction bisecting said propagation axes of said adjacent pair of said loudspeakers (claim 52).

Re Claim 24, Keele, JR. discloses an array as claimed in claim 21, in which said loudspeakers of said line sources are of a same type (paras 0111-0114).

Re Claim 25, Keele, JR. discloses an array as claimed in claim 21, in which said line sources comprise first and second sets, said loudspeakers of each said line source of said first set having a first frequency range and said loudspeakers of each said line source of said second set having a second frequency range different from said first frequency range (paras 0023-0028).

Re Claim 26, Keele, JR. discloses an array as claimed in claim 25, in which said first frequency range is one of substantially contiguous and overlapping with said second frequency range (para 0094).

Claim 27 has been analyzed and rejected according to claim 1.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Keele, JR. US Patent Pub. 2004/0240697 A1 as applied to claim 9 above, in view of Lehman, US Patent 6,112,847.

Re Claim 10, Keele, JR. discloses an array as claimed in claim 9, but fails to disclose in which each of said loudspeakers comprises inner and outer horn-loading members defining therebetween a single sound propagation channel whose shape perpendicular to said propagation axes is topologically equivalent (isomorphic?) to an annulus. However, Lehman does (fig. 2: 13a-13d).

Taking the combined teachings of Keele, JR. and Lehman as a whole, one skilled in the art would have found it obvious to modify the loudspeaker array of Keele, JR. with in which each of said loudspeakers comprises inner and outer horn-loading members defining therebetween a single sound propagation channel whose shape perpendicular to said propagation axes is topologically equivalent (isomorphic?) to an annulus as taught in Lehman (fig. 2: 13a-13d) to enhance the performance of the loudspeaker.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Keele, JR. US Patent Pub. 2004/0240697 A1.

Re Claim 28, Keele, JR. disclose a system as claimed in claim 27, where there are two loudspeaker arrays (claim 36) but fails to disclose in which a curvature of each



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said line source of a first of said loudspeaker arrays is different from a curvature of each said line source of a second of said loudspeaker arrays.

However, such a limitation is the inventor's preference thus it would have been obvious to modify the loudspeaker arrays by placing them in different curves for the benefit of creating a loudspeaker system that can cover a broader area.

#### **Contact**

. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George C. Monikang whose telephone number is 571-270-1190. The examiner can normally be reached on M-F. alt Fri. Off 7:30am-5:00pm (est).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

George Monikang

7/10/2007

  
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